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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/893,488	06/29/2001	Tomoaki Kato	Q63852	6301

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EXAMINER

LEURIG, SHARLENE L

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 11/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/893,488

Applicant(s)

KATO ET AL.

Examiner

Sharlene Leurig

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) 16-19 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-19 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,4
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-15, drawn to a spark plug, classified in class 313, subclass 143.
 - II. Claims 16-19, drawn to a method of producing a spark plug, classified in class 445, subclass 7.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the spark plug can be made by a heat treatment carried out in a nitrogen or an inert gas atmosphere.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.
5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Abe Rosner on October 3, 2002 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant in replying to this Office action. Claims 16-19 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Priority

8. Applicant cannot rely upon the foreign priority papers to overcome this rejection because a translation of said papers has not been made of record in accordance with 37 CFR 1.55. See MPEP § 201.15.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-4 and 7 are rejected under 35 U.S.C. 102(b) as being anticipated by Mamoru et al. (JP 06-338376) (of record). Mamoru discloses a spark plug with a center electrode (Figure 1, element 3) and a ground electrode (Figure 1, element 4) "which

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forms the spark discharge gap G" between it and the center electrode (paragraph 0009, line 6). The igniter (Figure 1, element 12), fixed to the ground electrode in the example illustrated by Figure 1, faces the spark discharge gap, G. Mamoru discloses that the "precious alloy electrode" may be formed in the igniter on the ground electrode or the center electrode (paragraph 0032, line 5). The principal component of the igniter consists of at least one of the following metallic materials: platinum or a platinum alloy such as a "Pt-nickel alloy" or an "Ir-nickel alloy" or a "Pt-Ir-nickel alloy" (paragraph 0014, line 3). The gas concentration of nitrogen and oxygen of the Pt-nickel alloy is 100 ppm or less (paragraph 0029, line 5). The Pt-nickel alloy consists of 20% of the weight in nickel, fitting into the claimed range of 2% to 40% of total mass (paragraph 0017, line 2). Mamoru further discloses the spark plug to be designed in such a way to "prevent the injury on an internal combustion engine," which is intrinsically a gas engine, in which it is mounted (paragraph 0005, line 4).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 5-6 and 8-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mamoru et al. (JP 06-338376) (of record) in view of Abe et al. (6,215,234). Mamoru discloses a spark plug with all the limitations discussed above but lacks a spark

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discharge gap defined by the range of 0.2 mm to 0.6 mm and a crystal grain mean diameter of not less than 50 micrometers. However, Mamoru recognizes the need for a long spark plug life (paragraph 0024, line 5) and the suppression of crack formation in the noble metal material (paragraph 0026, line 5). Abe teaches the combination of a spark discharge gap within a range of 0.2 mm to 0.4 mm (column 2, line 5), which fits within the claimed range of 0.2 mm to 0.6 mm and is therefore not more than 0.6 mm, with a noble metal chip (igniter) having crystal grains with an average axial diameter N and an average radial diameter K fulfilling the relationships of $N > K$ and $(N+K)/2 \leq 50\mu\text{m}$ (column 7, line 57). These relationships mean N, the mean axial diameter of the crystal grain size, is defined as greater (or “no less than”) 50 μm . More explicitly, the noble metal chips were formed to “have grains with an average diameter of 50 μm ” (column 9, line 18). The mean diameter is taken to mean the average of the maximum interval between a pair of parallel lines which are tangent to an outline of a given grain. Abe teaches that such an embodiment creates an efficient spark plug that resists crack formation, “resulting in spark plug long-life” (column 2, line 42). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to modify Mamoru's spark plug with the combination of a spark discharge gap fitting with a range of 0.2 mm to 0.4 mm and an igniter with crystal grain mean diameter of 50 μm or more to create an efficient and long-lived spark plug.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sharlene Leurig whose telephone number is (703)305-


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4745. The examiner can normally be reached on Monday through Friday, 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimesh Patel can be reached on (703)305-4794. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-7382 for regular communications and (703)308-7382 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

Sharlene Leurig
October 28, 2002



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